

ENGINEERING DIVISION WORKING COPY
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CAPE NEDDICK HARBOR MAINE

SURVEY

(REVIEW OF REPORTS)



U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS WALTHAM, MASS.

APRIL 16, 1962

SURVEY (REVIEW OF REPORTS)

CAPE NEDDICK HARBOR, YORK, MAINE

SYLLABUS

The Division Engineer finds that Federal provision of the locally desired channel and anchorage or any alternative is not economically justified for the existing and prospective recreational and fishing fleets in the vicinity. While benefits would derive from increased lobstering and recreational boating by the existing and reasonably prospective fleets if improvements were made, these benefits do not exceed the estimated annual charges. Therefore, the Division Engineer recommends no Federal improvement for navigation in Cape Neddick Harbor at this time. He does recommend local consideration of construction of a small-boat launching ramp facility.

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U. S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
424 Trapelo Road
Waltham 54, Mass.

NEDGW

16 April 1962

SUBJECT: Survey (Review of Reports) of Cape Neddick Harbor,
York, Maine

TO: Chief of Engineers
ATTN: ENGOW-P
Department of the Army
Washington 25, D. C.

AUTHORITY

1. This study is to be made in accordance with the following resolution adopted 27 June 1956:

"RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE HOUSE OF REPRESENTATIVES, UNITED STATES, That the Board of Engineers for Rivers and Harbors be, and is hereby, requested to review the reports on Cape Neddick River, York, Maine, submitted in House Document Numbered 526, Sixty-fourth Congress, First Session, and other pertinent reports, with a view to determining whether any improvements for navigation are advisable at this time."

2. The report was assigned to the New England Division by the Chief of Engineers by 1st Indorsement dated 1 August 1956.

PURPOSE AND EXTENT OF STUDY

3. This study was made to determine the economic justification of a Federal project in accordance with the desires of local interests. In preparation of this report, a hydrographic survey, including soundings and probings, was made in the areas

desired for improvement. Study was made of available data on the use of this harbor, together with nearby harbors, in order to determine the adequacy of present facilities and the need for additional harbor improvements in the area. A public hearing was held at York, Maine, on 23 January 1958. Information obtained at the hearing is described later under "Improvement Desired." Subsequent to the hearing, local interests were consulted to obtain current data on information previously submitted. Construction plans of the highway bridge were obtained from the State Highway Department. Available maps, charts, and aerial photographs were studied and field trips were made.

DESCRIPTION

4. Cape Neddick Harbor, in the Town of York at the mouth of the Cape Neddick River, is less than one mile north of Cape Neddick, about 10 miles northeast of Portsmouth Harbor, about 4.5 miles southwest of Perkins Cove, and about 4.5 miles northeast of York Harbor. The Harbor is a small cove between rocky headlands, which shelter it partially from the Atlantic Ocean.

5. Cape Neddick River is a narrow stream about 3-1/2 miles in length winding from its source in Chases Pond to within about 2,500 feet of the Atlantic, where it widens to about 1,500 feet, forming Cape Neddick Harbor. The total drainage area is about seven square miles. The tidal portion of the river extends approximately one mile inland. At the harbor entrance, a rectangular area about 1,000 feet long and 500 feet wide has depths of about 30 feet, but the remainder of the harbor comprising an area of about 40 acres is shoal with depths ranging from 0 to 12 feet at mean low water. The channel in the river to about 500 feet above the highway bridge has a controlling depth of two feet above mean low water.

6. The harbor is exposed to the east and southeast, but protected by Cape Neddick from the south and by the mainland from the west and north. Prevailing winds in the area are from the south and southwest during summer and from the north and northwest during winter. The mean range of

tide is about 8.7 feet. Tidal currents are weak, averaging about 0.4 to 0.5 knots at strength. The area is shown on U.S.C. & G. S. Charts 211 and 1205, U.S.C.G.S. and Army Map Service maps, and on the map accompanying this report.

TRIBUTARY AREA

7. The immediate tributary area is the villages of Cape Neddick and York Beach, which are part of the Town of York. The year-round population of York in 1960 was 4,663, an increase of 1,407 over the 1950 population. The York Beach-Cape Neddick area population expands from 900 year round to 20,000 during the vacation season. The town is chiefly residential with the service of tourists and visitors being the major industry. Fishing is the second industry, lobster fishing in particular. There is some farming, and a number of residents work at the Portsmouth Navy Yard. The town is served by a network of good roads, with U. S. Route 1A adjacent to the river and harbor on the south. Bus companies serve the town with regular schedules on U. S. Route 1 about 3/4 miles to the west. Railroad connections are available at Portsmouth, New Hampshire, about seven miles southwest by highway.

BRIDGES

8. A highway bridge owned by the Maine State Highway Commission crosses Cape Neddick River about 0.2 miles upstream from the mouth of the river. The center of three fixed spans has a clear width of 37 feet normal to the channel. The vertical clearances are 19 feet at mean low water and 11 feet at mean high water. Plans for this bridge were approved by the Secretary of the Army, 6 June 1923.

9. The remains of a discontinued electric railway bridge cross the river about 0.3 miles upstream from its mouth. The bridge was of the swing type, its center span having a clear width of 30 feet normal to the channel. The bridge and deck are gone, only pile bents and fender piles remain. The last known owner of the bridge was the Atlantic Shore Line Railway Company.

10. There are no underwater pipes, cables, sewers or water mains near the channel or the proposed anchorage. On the up-river side of the highway bridge, however, there is one submerged water main. There have been other water mains recently constructed that would make it possible to abandon the submerged main.

11. The remains of an old dam is located at river mile 0.6 and another highway bridge at river mile 0.7 which is about the head of tide water. Local reports indicate that sailing vessels used the river as far as the dam; there are no reports of navigation above it.

PRIOR REPORTS

12. The report under review was authorized by the River and Harbor Act of 4 March 1915, submitted to Congress 14 December 1915, and published in House Document 526, 64th Congress, 1st Session. The report was unfavorable to construction of a breakwater extending southeasterly across the ledges from Weare Point to develop commerce and provide a harbor for refuge because the work was not justified.

13. There is no existing Federal project for navigation for either Cape Neddick River or Cape Neddick Harbor. No known improvements have been made by local interests.

TERMINAL AND TRANSFER FACILITIES

14. The only dock in Cape Neddick Harbor is a wood pile pier 6 feet wide and 60 feet long used by the 10 local lobstermen. This pier is about 300 feet above the highway bridge. The depth at the end of the pier is about 3 feet above mean low water. Other facilities could be expected to develop if the harbor were improved.

IMPROVEMENT DESIRED

15. A public hearing was held at York, Maine, on 23 January 1958 to enable local interests to express their

views with respect to improvement of Cape Neddick Harbor, Maine. This hearing was attended by representatives of the Federal, State, and local governments, the fishing industry and other business interests. Proposals for harbor improvements were presented principally by members of a local committee. They requested consideration of two alternative improvements:

a. Plan No. 1 - A navigable channel into the river with an anchorage above the highway bridge; the channel to be approximately 50 yards wide, 10 feet deep and 375 yards long, and the anchorage area to be approximately 125 yards wide and 168 yards long.

b. Plan No. 2 - Breakwaters to protect the outer harbor extending from Weare Point running southwesterly 250 yards and from Barn Point running northeasterly 250 yards.

16. During the discussion, it was stated that because the bridge clearance limits the size of craft that could use the anchorage a depth of 6 feet would probably be adequate. The 10-foot depth was desired below the bridge to permit larger craft to anchor there. Spoil disposal areas were offered and two possible sites for a public landing were discussed.

EXISTING AND PROSPECTIVE COMMERCE

17. Cape Neddick Harbor is used by 10 lobster fishermen that fish the ledges along shore near the harbor mouth. The present catch is estimated at 50 tons annually, worth about \$40,000. The U. S. Fish and Wildlife Service reports (see Appendix B) that the inshore lobster resource would support a maximum of a 5 per cent increase.

18. The harbor is also used by 27 relatively small recreational boats, with a total depreciated value of \$35,000. Local interests consider that both the fishing and the recreational fleets would be substantially increased if the harbor is improved.

VESSEL TRAFFIC

19. The 10 lobster boats average about 200 round-trips each per year. The recreational boats use the harbor only during the summer months and go out only in good weather. The annual vessel trips for both fleets is estimated to total about 4,000.

DIFFICULTIES ATTENDING NAVIGATION

20. Navigation at Cape Neddick Harbor is limited by wave action in the outer harbor where depths are adequate for anchorage, by the controlling depth of the river channel, the clearance limits of the highway bridge, and the almost complete lack of dock and shore facilities. The outer harbor is only partly protected by ledge outcrops against Atlantic Ocean waves from the east to southeast and is safe for anchorage only in fair weather. The river can be navigated only on the higher tide stages. The vertical bridge clearance of 11 feet at mean high tide prevents large craft from reaching the protected area above the bridge. The only dock is a small pier used by the lobstermen.

WATER POWER AND OTHER SPECIAL SUBJECTS

21. Water power, water supply, pollution, or flood problems would not be affected by any of the improvements desired or considered in this report. The U. S. Fish and Wildlife Service has reported (see Appendix B) that improvement would result in commercial fishing benefits, and that spoil placed on the north bank of the river would be damaging to wildlife resources.

PLAN OF IMPROVEMENT

22. The two plans of improvement requested by local interests have been considered. In view of the bridge clearances and the magnitude of the benefits expected, a smaller channel and anchorage was also considered. An evaluation of

the desired breakwaters indicated that greater protection could be provided by one alternative at about the same cost, and good shelter for a smaller area by a second alternative at a substantially lower cost. The several alternatives considered and their approximate cost are:

Desired 10'x150' Channel & 10'x4.5 Acre Anchorage	\$ 600,000*
Alternate 10'x50' & 100' Channel & 10'x4.5 Acre Anchorage	\$ 500,000*
Alternate 10'x50' & 100' Channel & 10'x3 Acre Anchorage	\$ 400,000*
Alternate 6'x50' & 100' Channel & 6'x3 Acre Anchorage	\$ 245,000*
Desired Breakwaters North 750' - South 750'	\$1,200,000
Alternate Breakwaters North 1,000' - South 1,000'	\$1,000,000
Alternate Breakwaters North 500' - South 900'	\$ 650,000

*Providing rock removal is not required.

23. The improvement selected for further consideration is the least costly of the various alternatives considered. It would provide a channel 6 feet deep and 50 & 100 feet wide to the highway bridge in Cape Neddick River, and an anchorage of about 3 acres 6 feet deep above the bridge. The channel through the bridge would be limited to a width of 20 feet with side slopes of 2 to 1 to prevent damage to the structure. This improvement would meet the needs of the existing local fleet and would provide space for reasonably prospective transfer and new boats. It would also leave undeveloped areas for future construction of marina type facilities to serve an additional 75 to 100 boats.

SHORELINE CHANGES

24. Construction of breakwaters would protect the shores inside the harbors and reduce any present erosion tendencies. A small amount of accretion at the shore ends of the breakwaters is probable, but no major shoreline change is

anticipated because the shores near the structure location are exposed ledge. Construction of the channel or anchorage would not affect the shorelines.

REQUIRED AIDS TO NAVIGATION

25. The U. S. Coast Guard has not been consulted on additional navigation aids that would be required if the harbor were improved because no improvement appears justified. Because it is probable that additional aids would be required for any improvement, an estimate has been included in the cost estimate.

ESTIMATES OF FIRST COST

26. Estimates of the first cost have been made for all the improvements considered and are given in detail in Appendix A. The cost of the plan of improvement selected for further consideration is given below. The Federal construction work assumed consists of dredging mud, sand and gravel to provide a 6-foot deep channel and anchorage above the highway bridge. The cost is based on use of a dragline or clamshell excavator with spoil barged to sea. Costs are based on January 1962 price levels and include an allowance for contingencies.

27. It is important to note that this estimate does not have any allowance for any rock or ledge removal that may be required. Although there is evidence of ledge near the anchorage area, the field investigations were suspended when it appeared that removal of ordinary material could not be justified. The first cost of the project if there is no rock is shown below:

Project First Cost	
Dredging	\$214,000
Engineering & Design	7,000
Supervision & Administration	16,000
	<u>\$237,000</u>
Pre-authorization Studies	7,000
Additional Navigation Aids	1,000
	<u>1,000</u>
Project Cost	\$245,000
Public Landing (Self-liquidating)	15,000
	<u>15,000</u>
Total	\$260,000

ESTIMATES OF ANNUAL CHARGES

28. Annual charges for the above improvement were estimated using an interest rate of 2.625 per cent for Federal investment, 3.5 per cent for non-Federal investment, and a useful project life of 50 years. Non-Federal investment was based on an apportionment of costs commensurate with the local benefits. A cash contribution of 23 per cent of the project construction cost should be required for a Federal project. Future annual maintenance was based on an estimated shoaling rate of about 1,000 cubic yards annually.

Estimated Annual Charges

Federal Investment	\$191,000	
Non-Federal Investment	<u>54,000</u>	
Total	\$245,000	
Federal: Interest & Amortization		
(\$191,000) (0.03614)		\$ 6,900
Maintenance: Dredging		2,000
Navigation Aids		<u>100</u>
		\$ 9,000
Non-Federal: Interest & Amortization		
(\$54,000) (0.04263)		<u>\$ 2,300</u>
Total Annual Charges		\$11,300

ESTIMATES OF BENEFITS

29. Benefits have been estimated for improvement of Cape Neddick Harbor, Maine, by provision of a six-foot channel and providing adequate anchorage area. Tangible benefits from such improvements would accrue to both fishing and pleasure boats from the increased use of the existing fleet now based in the harbor, the addition of new boats to the local fleet as well as an increased number of transient boats, and a reduction of storm damage to boats. Similar benefits would result from the construction of breakwaters to shelter the outer harbor.

30. Local interests consider that the improvement would result in additional lobster catch by the existing fleet of 10 boats. Because the present controlling depth is about 3 feet above low water and a lobster boat requires at least 3 feet of water to operate, the fleet can operate only when the tide is more than 6 feet above mean low water. The mean range of tide is 8.7 feet so that the average tidal delay is 2.4 hours per trip. The present annual catch by the existing fleet of 10 boats is estimated at 100,000 pounds worth about \$40,000. Local interests have stated that they make 200 trips per boat at an average catch of 50 pounds. Statements of 17 residents indicate an intention to engage in fishing and lobstering and a desire to use Cape Neddick Harbor for anchorage.

31. The U. S. Fish and Wildlife Service has considered this information and reported that the lobster resource in this area would support no more than a 5 per cent increase in present catches. (See Appendix B) The benefit for increased fish catch is therefore computed on the basis of a 5 per cent increase, or 5,000 additional pounds of lobster. At the present price level of 40 cents per pound, this additional catch would be worth \$2,000. There would be an additional cost to obtain this catch, estimated at 50 per cent of the gross value of the catch. The benefit for additional lobster catch resulting from improvements of Cape Neddick Harbor is therefore estimated to be \$1,000.

32. Local interests have also estimated that 10 lobstermen now operating from York Harbor would transfer to Cape Neddick if it were improved. The advantage of such a transfer would be a saving in operating time and costs. Consideration of the distance between the two harbors and the location of the lobstering grounds indicate that a few lobstermen might realize a time saving of 2 hours per trip. On the basis of 200 trips per year and operating costs of \$2.00 per hour for travel time, the annual reduction in operating cost is estimated at \$800 per boat. In view of the location of the fishing grounds, the transfer of 2 such boats is considered reasonable by the U. S. Fish and Wildlife Service. For the purpose of benefit evaluation and to allow for reasonable doubt, it is assumed that as many as 4 lobstermen would transfer from York Harbor to Cape Neddick after improvement. For 4 boats the annual benefit would be \$3,200.

33. The annual damage to the lobster boats based at Cape Neddick Harbor from grounding in the channel and in the anchorage during storms is estimated at \$100 per boat per year. One-half of this amount would be eliminated by improvement of the harbor, resulting in a benefit for the 10 boats of \$500 annually.

34. The existing recreational boat fleet consists of 27 relatively small boats with a total average depreciated value of \$35,000. The average ideal annual return for recreational boats of this type is about 8 per cent of their value, or \$2,800 for the fleet. Under present conditions, this fleet can receive only about 60 per cent of the ideal annual return, while the improved channel and anchorage would permit increased use of the fleet to the extent that the owners would be able to receive 90 per cent of the ideal return, a gain of 30 per cent. (An increase beyond 90 per cent of the ideal annual return is not considered possible because the fleet can only be used when the Atlantic Ocean is relatively calm. There is no sheltered boating area that can be used without going out to sea.) The annual benefit from increased recreational use of the existing fleet is 30 per cent of \$2,800, or \$840.

35. Improvement of the harbor would result in the transfer of recreational boats from other harbors. The limited bridge clearance would limit the size of these boats, so the average depreciated value would be about \$2,500 each. The ideal annual return for a boat of this size would be about 8 per cent, or \$200. It is considered that Cape Neddick owners would receive about 70 per cent of this amount if they keep their boat at York Harbor, while they would receive about 90 per cent if it could be transferred to Cape Neddick Harbor, a gain of 20 per cent or \$40 per boat annually. It is noted that most boat owners keeping their boats at York Harbor receive about 95 per cent of the ideal annual return. Only those owners living in the immediate vicinity of Cape Neddick Harbor, and who ordinarily travel back to the immediate offshore area, would have a return as low as 70 per cent of the ideal. In view of this, it is estimated that perhaps as many as 6 boats would benefit from a transfer. The total annual benefit for 6 boats would be \$240.

36. It is expected that improvement of Cape Neddick Harbor would result in the purchase of new recreational boats by nearby residents. The recently completed improvement of York Harbor was estimated to attract 16 new boats to the existing fleet of 60 boats, an increase of 27 per cent. On the same basis, improvement at Cape Neddick would attract 7 new boats. Local interests expect a greater increase. To allow for reasonable doubt, benefits are evaluated for 10 new boats.

37. In view of the bridge clearance limitation and the size of the harbor, the new boats are expected to have an average depreciated value of about \$3,000 each, or \$30,000 for 10 boats. If the owners receive 90 per cent of an ideal annual return of 8 per cent of the average depreciated value, the total annual benefit for 10 new boats would be \$2,160.

38. The annual damage for the 27 boats in the existing fleet from grounding in the channel and anchorage is estimated to be about \$50 per boat, a total of \$1,350 for the fleet. (These boats are taken out of the harbor in the winter.) One-half of this damage would be eliminated by improvement, resulting in a benefit for the fleet of \$680 annually.

39. The evaluated benefits for improvement of Cape Neddick Harbor are summarized below. It is considered that one-half of recreational boating benefits are local in nature.

Summary of Benefits

	<u>General</u>	<u>Local</u>	<u>Total</u>
Increased lobster catch (10 boats)	\$1,000	---	\$1,000
Reduced operating costs for 4 transferred lobster boats	3,200	---	3,200
Reduced damages to 10 fishing boats	500	---	500

(Summary of Benefits - Contd)

	<u>General</u>	<u>Local</u>	<u>Total</u>
Increased use of Recreational Boats:			
Existing Fleet (27 Boats)	\$ 420	\$ 420	\$ 840
Transferred Fleet (6 Boats)	120	120	240
New Boats (10 Boats)	1,080	1,080	2,160
Reduced damages to 27 Recreational Boats	<u>340</u>	<u>340</u>	<u>680</u>
	\$6,660	\$1,960	\$8,620
	77%	23%	100%

40. In the event of improvement, local interests have reported that land is available for suitable spoilage areas, if dredging is done. The U. S. Fish and Wildlife Service reports that placing material on the salt marsh north of the anchorage area would be damaging to wildlife resources. For this reason, and because the dredging could not be accomplished with a hydraulic dredge, it is anticipated that there will be no land enhancement.

41. Local interests feel that the improvement will attract additional visitors to the York Beach area, which would benefit the local economy. No evaluation of this possibility has been made because any gain involved would be a secondary benefit of a local nature and would be a duplication of benefits from increased use of recreational craft that have been evaluated.

COMPARISON OF BENEFITS AND COSTS

42. A comparison of the estimated annual benefits of \$8,600 with the estimated annual charges of \$11,300 indicates a benefit-cost ratio of 0.8 to 1. It must be noted that the

annual charges used for this ratio are based on first costs if there is no rock in the anchorage area. Obviously, if rock removal is necessary to construct the improvement, the benefit-cost ratio would be lower.

COORDINATION WITH OTHER AGENCIES

43. All Federal, State, and local agencies known to have an interest in the development and use of Cape Neddick Harbor, York, Maine, were notified of the public hearing on the proposed improvement held at York Village, Maine, on 23 January 1958. Officials of York, Maine, and representatives of local boating interests attended the hearing. Local interests were again consulted on the study indications. The Town of York Selectmen have indicated that there appear to be no unconsidered factors that leave any cause for optimism in the development of the project. The Cape Neddick Harbor Committee is not convinced that the economic evaluation is a proper measure of the value of the project.

44. The U. S. Fish and Wildlife Service has been consulted and has furnished information on the fishing benefits and the effect of the considered improvements on fish and wildlife resources. Their report is contained in Appendix B.

DISCUSSION

45. Cape Neddick Harbor is a small cove in the Town of York, Maine, at the mouth of the Cape Neddick River about 4 miles northeast of York Harbor. Because it is poorly sheltered, it is only used by 10 small lobster and 27 small recreational boats that moor above the highway bridge where there is no water at low tide.

46. York Beach and Cape Neddick interests desire breakwaters to protect the outer harbor or a channel and anchorage in the protected area above the bridge. Either improvement would permit increased fishing and recreational boating, which would benefit the local economy. Any of several plans for breakwaters or channels would provide

substantially the same benefits so major consideration was given to the least expensive: a channel with a three-acre anchorage above the bridge, six feet deep. This improvement is estimated to cost \$245,000, if no rock removal is required. The extent of rock in the anchorage was not investigated because it appeared that improvement would not be justified even if there is no rock. If such a Federal project were constructed, local interests should be required to contribute 23 per cent of the first cost, or about \$54,000, and construct a public landing, which would cost about \$15,000.

47. Analysis of present and prospective navigation needs in this area indicates that the present Cape Neddick fleet of 10 small lobster boats and 27 recreational boats would be benefited by provision of sheltered anchorage. In addition, it appears possible that 10 small boats would be transferred from York Harbor, and perhaps 10 new boats would be purchased as a result of improvement. The total of these benefits is \$8,600, which with annual charges of \$11,300 indicates a benefit cost ratio of 0.8 to 1.

48. Local interests feel that an adequate harbor at Cape Neddick would attract large fishing and recreational boats from York Harbor and permit a substantial increase in the recreational fleet in the town. This is probable, but it does not appear that any substantial navigation benefit would result. The present facilities at York Harbor appear adequate for the larger boats, and the new public landing and two small-boat anchorages constructed in 1961 at York Harbor are expected to meet the needs of small boats in the town for the next few years.

49. Although navigation facilities for this reach of the coast appear adequate for present needs (with the exception of the immediate problem at Cape Neddick Harbor), consideration was given to possible future requirements. There appear to be opportunities for additional protected anchorage in York River above the highway bridge and in the outer harbor at York as well as at Cape Neddick. cursory examination indicates that the cost of additional anchorage in York River would be lower than in the Cape Neddick River, and breakwaters at York Outer Harbor would protect a larger area at a lower cost than breakwaters at Cape Neddick. It

would, therefore, appear that future requirements for the whole community could best be met by further development of York Harbor before a large improvement is required at Cape Neddick Harbor.

50. Part of the problem at Cape Neddick Harbor is the lack of shore facilities and public access. There appears to be a need for a launching ramp for small boats that would be used at all stages of the tide. Such a facility would attract a substantial number of trailer boats, and in great measure meet local desires for development of recreational boating activity near York Beach. This need could be met by building a launching ramp with parking area and supply facilities on the south side of the harbor behind Barn Point. This area is sufficiently protected so that small boats could be launched and retrieved any time the ocean is calm enough to be safe for small open boats. The cost of an adequate facility probably would be less than the local cost for a Federal project. Construction of a shore facility of this nature is considered to be a local responsibility in which the Federal government should not participate.

CONCLUSION

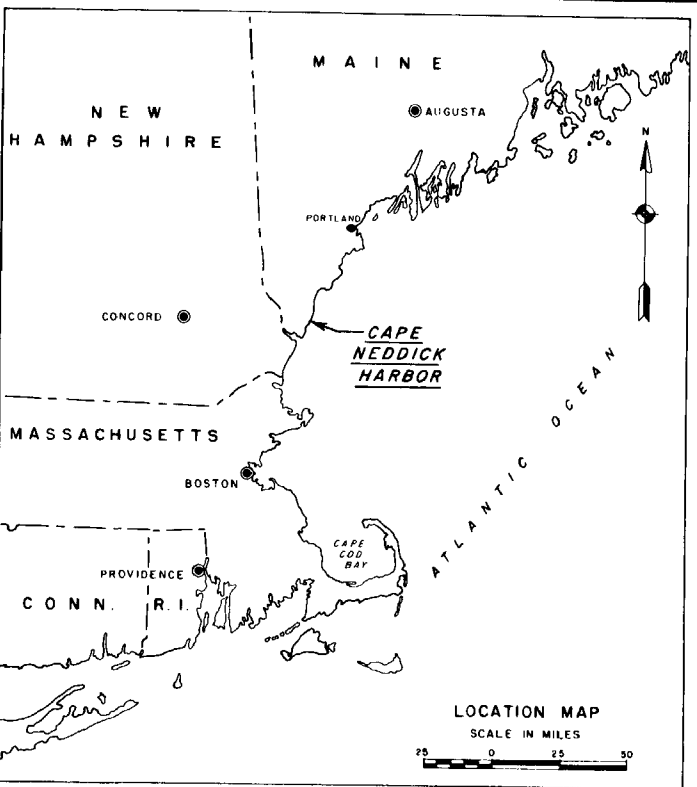
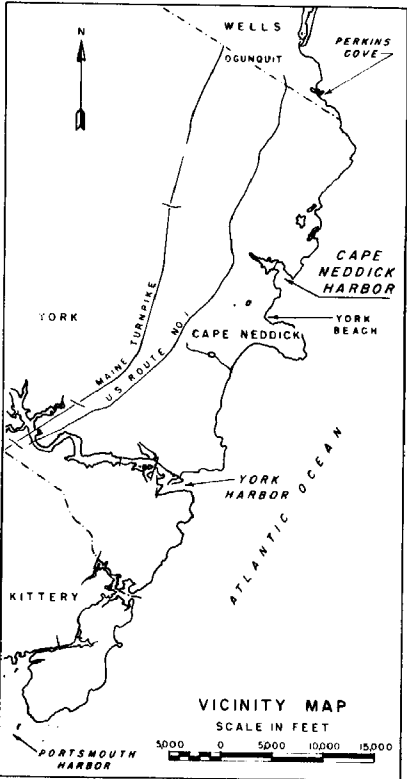
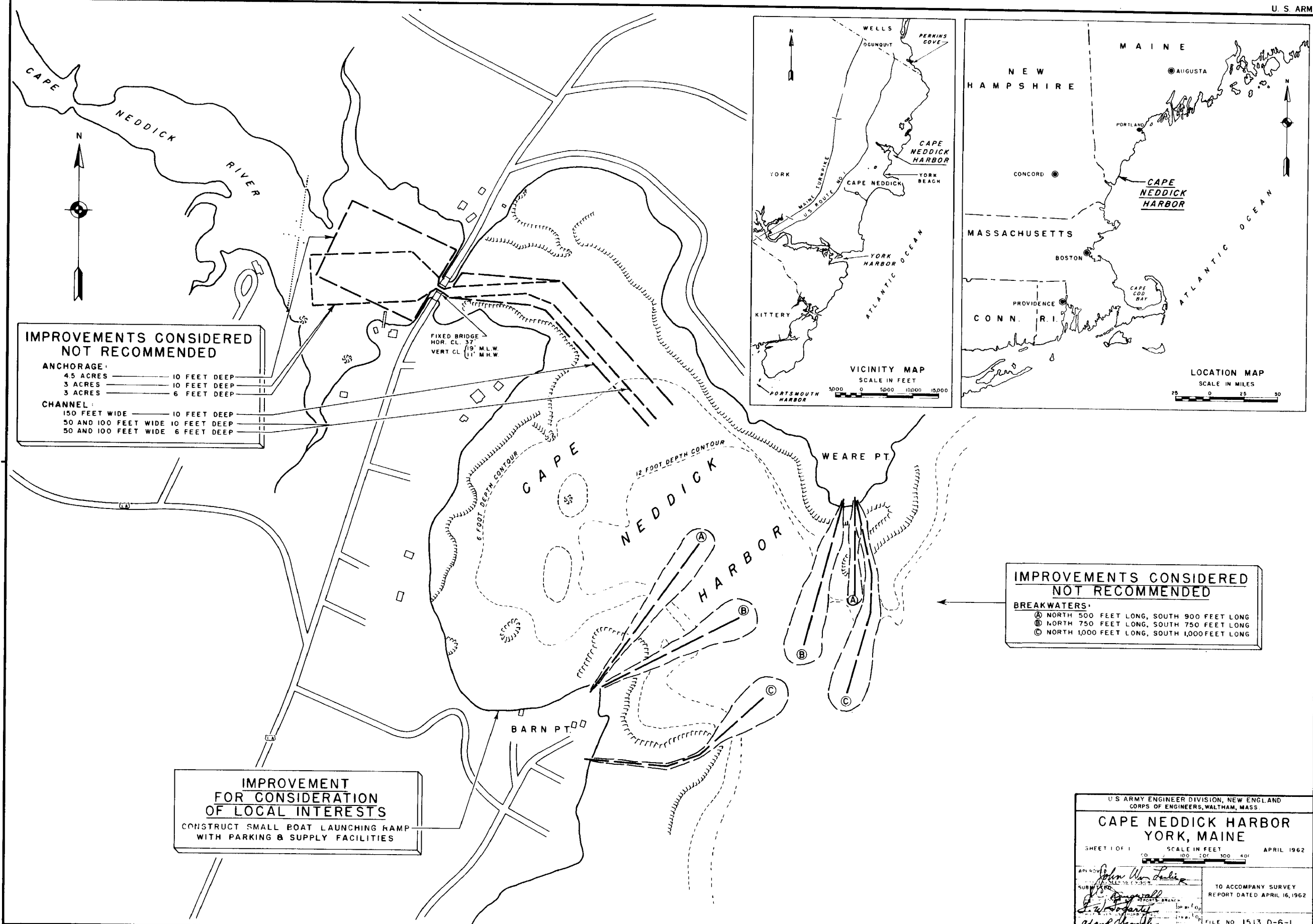
51. The Division Engineer concludes that although protected small-boat anchorage may be insufficient for the existing recreational and lobster fishing fleets in the vicinity of Cape Neddick Harbor, Maine, the benefits to be derived by provision of the desired improvement or any alternative Federal improvement are inadequate to justify economically the relatively high costs that would be involved in construction of the improvement.

52. Construction of an adequate boat launching facility in the outer harbor would attract trailer boats and permit a substantial increase in recreational boating and fishing. It appears that this could well be accomplished by local interests at less cost than would be required for local requirements for a Federal project.

RECOMMENDATION

52. In view of the foregoing, the Division Engineer recommends no Federal improvement of navigation in Cape Neddick Harbor, Maine, at this time. He recommends consideration by local interests of development of trailer boat launching facilities in the sheltered part of the outer harbor as the best means of improving navigation conditions for small recreational boating activity in the area.

OTTO J. ROHDE
Colonel, Corps of Engineers
Acting Division Engineer.



U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS, WALTHAM, MASS.

**CAPE NEDDICK HARBOR
YORK, MAINE**

SHEET 1 OF 1 SCALE IN FEET 0 100 200 300 400 APRIL 1962

APPROVED: *John W. Lillis*
SUBMITTED: *John W. Lillis*
DESIGNED BY: *John W. Lillis*
CHECKED BY: *John W. Lillis*
DRAWN BY: *John W. Lillis*

TO ACCOMPANY SURVEY
REPORT DATED APRIL 16, 1962

FILE NO 1513 D-6-1

SURVEY OF CAPE NEDDICK HARBOR
YORK, MAINE

APPENDIX A - COST ESTIMATES

1. The construction costs of the several alternative navigation improvements considered in the study are tabulated below. These costs may not be considered as final, but may be used only for comparing the various plans. Investigations needed to refine the accuracy of these costs were stopped when it became apparent that no improvement was justified. These costs are included in the report to reduce the study required if improvement of the harbor is considered in the future.
2. Quantity estimates were based on sounding surveys made in October 1958 for this study. Probings were made below the highway bridge, but the area above the bridge could not be probed by hand because it is covered with cobble which could not be penetrated to the depth required. The unit cost for dredging is based on removal by a small bucket dredge because hydraulic equipment small enough to get in could not handle the cobble. No estimate has been made of the cost of rock removal that may be required because the work could not be justified. There is surface evidence of rock outcrops in the area, and the highway bridge is founded on rock. Further consideration of improvement above the highway bridge would require additional probing and boring.
3. Unit costs are based on prices prevailing in January 1962 for similar work in the area. Quantity estimates for dredging are based on in place measurements, a 1 on 3 side slope and an allowance of 1 foot for overdepth. Breakwater tonnages are based on a stone structure 10 feet wide at an elevation 12 feet above mean low water with 1 on 2 side slopes and an allowance of 2 feet for settlement. This design was selected as reasonable in view of the location and exposure to wave attack. Additional design studies would be required to confirm the adequacy of this design, if there was any possibility that breakwaters might be economically justified.
4. The cost estimates include an allowance for navigation aids based on estimates for other harbors furnished by the U. S. Coast Guard, and a tentative evaluation of the additional aids that might be required. The U. S. Coast Guard should be consulted if further study of any of the improvements is needed.
5. The first costs of the alternative improvements, for use only in comparative studies, are shown in the following table.

	Channel to Anchorage above Bridge				Outer Harbor Breakwaters		
	Desired	Alternatives			Desired	Alternatives	
Channel Dimensions	10'x150'	10'x100'	10'x50'	6'x50'&100'	8 Ac 6'	10 Ac 6'	6 AC 6'
Anchorage Dimensions	4.5 Ac 10'	4.5 Ac 10'	3 Ac 10'	3 AC 6'	6 Ac 10'	10 Ac 10'	4 Ac 10'
Breakwater Length-North	--	--	--	--	750'	1,000'	500'
South	--	--	--	--	750'	1,000'	900'
Dredging or Breakwater							
Quantity	239,000 cy	198,000 cy	156,000 cy	93,000 cy	160,000T	133,000T	84,000T
Unit cost	\$2.00	\$2.00	\$2.00	\$2.00	\$6.00	\$6.00	\$6.00
PROJECT COST - Construction	\$478,000	\$396,000	\$312,000	\$186,000	\$960,000	\$800,000	\$505,000
- Contingencies	72,000	59,000	47,000	28,000	150,000	115,000	75,000
Total	\$550,000	\$455,000	\$359,000	\$214,000	\$1,110,000	\$915,000	\$580,000
Preauthorization Studies	7,000	7,000	7,000	7,000	7,000	7,000	7,000
Engineering & Design	10,000	10,000	10,000	7,000	13,000	13,000	13,000
Supervision & Admin.	31,000	26,000	22,000	16,000	60,000	55,000	40,000
TOTAL (Corps of Engineers & Required non- Federal contribu- tions)	\$598,000 *	\$498,000 *	\$398,000 *	\$244,000 *	\$1,190,000	\$990,000	\$640,000
OTHER COSTS							
Navigation Aids (Coast Guard)	2,000	2,000	2,000	1,000	10,000	10,000	10,000
TOTAL COST	\$600,000	\$500,000	\$400,000	\$245,000	\$1,200,000	\$1,000,000	\$650,000

*Does not include costs for any rock removal, which may be required.

APPENDIX B

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

March 6, 1961

Division Engineer
New England Division
U. S. Corps of Engineers
424 Trapelo Road
Waltham 54, Massachusetts

Dear Sir:

This letter constitutes our conservation and development report on your navigation study of Cape Neddick Harbor, Maine. It has been prepared in cooperation with the Maine Department of Inland Fisheries and Game and the Maine Department of Sea and Shore Fisheries. Commissioner Green of the Maine Department of Sea and Shore Fisheries has informed us that he is scheduling a further meeting with local interests to determine whether there are additional benefits which could be legitimately ascribed to the project.

We understand that four possible plans of improvement are being considered. The local interests submitted two possible plans with the request that each should be considered separately to determine which would be more feasible. Their Plan 1 would provide an anchorage and channel 10 feet deep. Their Plan 2 would provide two breakwaters at the entrance to Cape Neddick Harbor. Alternates for the above two plans, which would be more economical than the original plans, are being considered by your office.

Your preliminary estimates of commercial fishery benefits resulting from improvement of Cape Neddick Harbor by any of the 4 plans appear reasonable. The lobster catch by the existing 10 boats would be increased at a maximum of 5%. Because the present lobster catch is about 100,000 pounds and valued at \$40,000, the gross value of the increase would be \$2,000, and if the operating costs to obtain the increased catch are 50% of the gross value of the catch, the annual net benefit would be \$1,000. Your analyses of the benefits associated with the transfer boats under the prevailing circumstances in Cape Neddick Harbor, also appear reasonable. Savings in operating

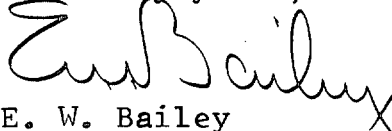
cost should be considered as a benefit to the commercial fishery. This benefit would be based on a savings of 2 hours on each of 200 trips at \$2.00 per hour for a savings of \$800 per vessel annually. Since two vessels would be transferred, the annual savings in operating costs would be \$1,600.

The figure of \$1,000 annually for reduced damages from storms to vessels of the existing fleet appears to be a reasonable estimate. Thus, the total of the estimates of commercial fishery benefits is \$3,600. This evaluation does not include any benefits that may be derived from increased use of recreational craft.

You report that the north bank of the Cape Neddick River west of the Maine State Highway Bridge is available as a spoil area for the dredged material, but it may be more economical to spoil the dredged material at sea. Our studies show that this onshore site is valuable saltmarsh habitat for wintering and migrating waterfowl. The placement of any material in this area would be damaging to wildlife resources, and we recommend that this be avoided. We have no objection to spoil disposal at sea.

The opportunity to report on this project is appreciated.

Sincerely yours,



E. W. Bailey
Acting Regional Director
Bureau of Sport Fisheries & Wildlife



John T. Gharrett
Regional Director
Bureau of Commercial Fisheries

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

May 10, 1961

Division Engineer
New England Division
U. S. Corps of Engineers
424 Trapelo Road
Waltham 54, Massachusetts

Dear Sir:

Reference is made to your letter of March 17, 1961 which transmitted additional information concerning navigation use and fishery benefits supplied by local interests as related to Cape Neddick Harbor, Maine. Our conservation and development report of March 6, 1961 disclosed that local interests might submit additional information on fishery benefits. This letter is our report on the additional information submitted by local interests.

Our study of this material has determined that although Cape Neddick is a relatively small project, it is one of several for this particular area of the Maine coast to which the question of increase in commercial fishery landings attributable to transfer boats could be applied. This Service favors harbor improvements which would facilitate more and improved fishing activities. However, to base justification of a project on an estimated increase in transfer boats which have already been ascribed to other projects in close proximity would be misleading to those who have the responsibility for approving or disapproving project construction on the basis of such cost-benefit justification.

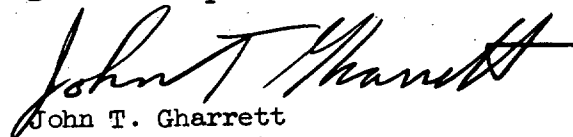
We conclude that the commercial fishery benefit analysis as outlined in our March 6, 1961 report is substantially correct, and that the additional benefits submitted by local interests have not significantly changed our conclusions relative to commercial fishery benefits.

The opportunity to re-evaluate this project is much appreciated.

Sincerely yours,


John S. Gottschalk
Regional Director

Bureau of Sport Fisheries & Wildlife


John T. Gharrett
Regional Director
Bureau of Commercial Fisheries

CAPE NEDDICK HARBOR
YORK, MAINE

Information called for by Senate Resolution 1148, 85th Congress.
Adopted 28 January 1958

1. Navigation problems. Cape Neddick Harbor is a small cove about 1/4 miles north of York Harbor used by a few small fishing and recreational boats. The only sheltered anchorage is in the Cape Neddick River above a low highway bridge, and this area is almost bare at low tide. Cape Neddick and York Beach interests desire breakwater protection, or a channel and anchorage in the river to encourage recreational boating activity in the area.
2. Improvements considered. Three alternative breakwater plans and 4 alternative channel and anchorage improvements were considered. The costs of these improvements range from \$1,200,000 to \$245,000, but the resulting benefits are not large enough to justify construction of any of them. The most favorable alternative has a Federal first cost of \$191,000, a non-Federal contribution of \$54,000, and a benefit-cost ratio of 0.8 based on a 50-year project life. Use of a 100-year project life would increase the benefit-cost ratio to 0.92.
3. Discussion. All the above alternatives are discussed in the body of the report. Federal improvement of this particular harbor does not appear to be warranted at this time. The improvement is desired by Cape Neddick and York Beach interests to provide an additional attraction, recreational boating and fishing, for tourists to the area. This desire could be met in great measure if an adequate trailer-boat launching terminal were constructed at the harbor. This opportunity, and a suitable location, has been pointed out to local interests.